**Q3:**

**Answers**

3a: For , so we have two solutions vis 2 and 4.

For , so we have one solution i.e., 0.

However, for , so we have .

3b: To check the convergence condition, we need to calculate the absolute value of the derivative of the function at the two solutions and determine if the derivative is less than 1 in magnitude. If the magnitude of the derivative is less than 1, it is a sufficient condition for the fixed-point iteration method to converge.

At , the derivative can be calculated as:

Since the magnitude of the derivative at is less than 1, the fixed-point iteration method converges at this solution.

At , the derivative can be calculated as:

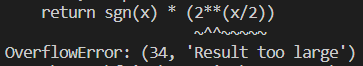
Since the magnitude of the derivative at is greater than 1, the fixed-point iteration method does not converge at this solution.

3c: For negative roots,

.

Hence, for the negative values will always give absolute value of derivatives less than 1 which means as shown above it will converge.

3d: At ,



3e: At ,

P26#yIS1

3f: At ,

P29#yIS1

3g: At ,

P32#yIS1